2. That if due regard be had to this slight variation of scale, photography, properly handled, gives reliable results, equal in accuracy and delicacy to those obtainable by any other known astronomical methods.

Since the writing of the foregoing very succinct and provisional account of work recently completed at the University Observatory, Dr. De la Rue, with that munificent generosity which he has so often exercised for the promotion of knowledge, has promised the pecuniary means of adding a photographic telescope or camera to the large Refractor in that institution. The condition attached to this gift is the compliance of the University with the request made, as above stated, by the Board of Visitors. Oxford, therefore, may now be expected to be associated with Greenwich in the production of the great international photographic chart of the heavens projected at the Paris Conference.

A Comparison of the Star-Places of the Argentine General Catalogue for 1875 *with those of the Cape Catalogue for* 1880, *and with those of other Southern Star Catalogues.* By A. M. W. Downing, M.A.

In making this comparison the places of those stars which are common to the Argentine General Catalogue and the Cape Catalogue for 1880, as given in the former, have been brought up from 1875 to 1880, and the differences, Cordoba—Cape, taken. Proper motion has been applied in forming both the Cordoba mean places for 1875 and the annual variations in all those cases in which a proper motion is given in the Cape Catalogue, the quantity of proper motion being taken from the latter. The mean epochs of the two Catalogues are, however, so nearly identical that this element can have no sensible effect on the result deduced from such a large number of stars as is the present. In combining the separate differences, formed as is explained above, each hour of R.A. has been taken by itself, and the stars occurring in each hour arranged in order of N.P.D., and then the means taken over zones 10° wide for the extremes, 90°—100°, 100°—110°, and 170°—180°, and 5° wide for intermediate N.P.D.s. In this manner the table (Table I.) has been formed, exhibiting the values of Cordoba—Cape, both for R.A. and N.P.D., corresponding to each hour of R.A. and to each zone of N.P.D., and the number of stars (always the same for $\Delta\alpha$ and $\Delta\delta$) in each group. It will of course be understood that the R.A.s of these two Catalogues depend on different systems of time-stars. In the formation of the Argentine Catalogue the star-places of the *American Ephemeris* for the different years were used; the Cape R.A.s depend on the annual lists of fundamental stars issued from the Greenwich Observatory.

The next table (Table II.) is formed by taking the means of the differences occurring in each horizontal line of Table I., and thus forming the mean difference in R.A. and N.P.D. over the whole range of N.P.D. corresponding to each hour of R.A.

The next table (Table III.) is formed from the means of vertical columns in Table I., and exhibits the mean differences in R.A. and N.P.D. over the whole range of R.A. corresponding to the different zones in which the N.P.D.s have been combined. To enable the reader better to estimate the range of the discordances in R.A. the differences corresponding to each zone of N.P.D. are given reduced to the equator, as well as the actual mean discordances at the different N.P.D.s.

It will be noticed that there is a remarkable break of continuity in the value of $\Delta\delta$ (as exhibited in Table III.) corresponding to the zone 140°—145°, and in that corresponding to 145°—150°, the value being $+0^s\cdot088$ for the former, and $+0^s\cdot006$ for the latter, or $+0^s\cdot054$ and $+0^s\cdot003$ respectively, expressed in equatorial interval. As the former of these mean differences depends on 1,229 stars, and the latter on 1,179 stars, this break cannot be considered accidental, and the general agreement is so good (except for stars in the immediate neighbourhood of the pole) that, though the actual quantities are small, the attention is arrested by the abrupt change.

The negative differences in N.P.D. appear to increase in magnitude as the northern limit is approached, being $-0''\cdot73$ for the zone 90°—100°. The difference for the zone 165°—170° is also abnormally large, though depending on a considerable number of stars.

It will be remarked that the mean discordance in R.A. is $+0^s\cdot047$ ($+0^s\cdot036$ reduced to the equator), and in N.P.D $-0''\cdot40$, and that the total number of stars used in the comparison is 11,752.

The next step has been to obtain the values of $\Delta\alpha$ and $\Delta\delta$ for the beginning of each hour of R.A. and for each 5° of N.P.D. by means of a graphical representation of the changes of these values taken from Tables II. and III., it being assumed that the mean value corresponding to a certain hour of R.A. or to a certain zone of N.P.D. refers to the middle of the hour or of the zone. The $\Delta\alpha$s and $\Delta\delta$s read off from their appropriate curves for the beginning of each hour of R.A. have been respectively corrected by the quantities $-0^s\cdot047$ and $+0''\cdot40$ (the means, with reversed signs, of the $\Delta\alpha$s and $\Delta\delta$s taken throughout), so that the difference Cordoba—Cape for any given R.A. and N.P.D. is the sum of the quantities corresponding to that R.A. and N.P.D. as given in the tables (Tables IV. and V.). From the comparisons published in *Monthly Notices*, vol. xlii. pp. 22, 23, vol. xlv. pp. 298–301, and vol. xlvi. pp. 366–379, in connection with the comparison of the Argentine General Catalogue and the Cape Catalogue for 1880, forming the first parts of Tables IV. and V., the remaining portions have been formed, and these

tables therefore give the corrections applicable to the Cape Catalogue for 1880, the Melbourne Catalogue for 1870, and the Cape Catalogues for 1860, 1850, and 1840, to reduce them respectively to the system of the Argentine General Catalogue for 1875.

It is remarkable that the differences in R.A. depending on N.P.D. of the Cordoba and Cape 1880 Catalogues at about 130°—140° are very nearly equal in magnitude, but *of opposite sign*, to those of the Cordoba and Cape 1850 Catalogues at the same N.P.D., the discordances of which at about this place have been the subject of considerable discussion (Introduction to Cape Catalogue for 1850, p. xi., *Monthly Notices*, vol. xlv. p. 38).

I should add that the expenses of the computations, the results of which are embodied in this paper, have been defrayed by a grant from the Government Grant Committee of the Royal Society, to whom my thanks are due.

TABLE I.

N.P.D.	90°–100°			100°–110°			110°–115°		
R.A. h h	Δα s	Δδ ″	No.	Δα s	Δδ ″	No.	Δα s	Δδ ″	No.
0–1	−·002	−0·66	19	+·004	+0·03	14	+·015	−0·44	21
1–2	+·003	−0·34	17	−·020	−0·29	12	+·008	−0·33	18
2–3	+·007	−0·56	23	+·040	−0·32	6	+·007	−0·71	27
3–4	+·014	−1·01	18	+·050	−0·87	6	+·017	−0·74	15
4–5	+·026	−0·69	20	+·019	−0·36	9	+·020	−0·09	13
5–6	+·037	−0·86	45	+·069	−0·65	15	+·072	+0·08	13
6–7	+·043	−0·63	12	+·093	−0·84	19	+·079	−0·30	33
7–8	+·090	−1·07	13	+·049	−1·27	17	+·098	−0·28	26
8–9	+·031	−0·96	13	+·090	−1·22	12	+·093	−0·17	10
9–10	+·080	−1·14	28	+·061	−1·01	11	+·002	+0·55	9
10–11	+·030	−0·72	27	+·078	−1·26	10	+·057	+0·19	7
11–12	+·026	−0·68	15	+·036	−0·71	12	+·072	+0·18	10
12–13	+·083	+0·43	3	−·010	−0·95	2	+·073	+0·11	16
13–14	+·070	−0·91	4	−·004	−0·80	5	+·082	+0·40	9
14–15	+·048	−0·34	4	+·048	−0·24	4	+·019	+0·27	16
15–16	−·015	−0·68	2	−·030	−0·35	5	+·043	+0·23	27
16–17	+·010	−0·16	4	+·008	+0·23	4	−·032	+0·50	23
17–18	−·040	−1·00	3	+·017	−1·85	3	+·050	+0·18	22
18–19	+·005	−1·59	4	·000	−0·72	1	+·028	−0·13	21
19–20	−·015	−0·78	2	−·014	+0·21	5	+·075	−0·20	17
20–21	−·020	−0·48	5	+·008	−0·42	5	+·058	−0·37	18
21–22	+·040	−0·17	3	+·005	−0·36	6	+·007	−0·52	17
22–23	−·004	−0·19	7	+·016	−0·78	10	+·018	−0·76	21
23–24	−·029	−0·23	10	+·039	−0·82	17	+·032	−0·59	19

N.P.D. R.A. h h	115°–120° Δα s	Δδ ″	No.	120°–125° Δα s	Δδ ″	No.	125°–130° Δα s	Δδ ″	No.
0–1	+·075	−0·64	28	+·100	−1·03	32	+·024	−0·55	44
1–2	+·077	−0·45	23	+·074	−0·76	36	+·017	−0·56	38
2–3	+·012	−0·53	34	+·059	−0·83	40	+·023	−0·43	42
3–4	+·016	−0·48	41	+·047	−0·55	39	+·030	−0·25	46
4–5	+·017	−0·32	36	+·078	−0·40	41	+·034	−0·12	60
5–6	+·096	−0·28	41	+·122	−0·46	50	+·088	+0·17	57
6–7	+·093	−0·22	76	+·128	−0·26	64	+·108	+0·09	55
7–8	+·108	−0·08	62	+·135	−0·17	57	+·110	+0·18	89
8–9	+·058	−0·07	52	+·093	−0·13	62	+·094	+0·12	68
9–10	+·056	−0·14	59	+·082	−0·25	49	+·063	−0·01	48
10–11	+·017	−0·07	33	+·064	−0·18	38	+·057	−0·13	44
11–12	+·079	0·00	45	+·095	−0·29	46	+·073	−0·03	47
12–13	+·086	+0·08	34	+·082	−0·37	41	+·112	−0·17	33
13–14	+·073	+0·15	38	+·057	−0·25	46	+·111	−0·30	42
14–15	+·039	+0·36	53	+·083	−0·10	51	+·085	−0·11	43
15–16	+·028	+0·14	49	+·082	−0·16	48	+·055	−0·08	63
16–17	+·048	+0·16	50	+·049	−0·30	70	+·061	−0·33	50
17–18	−·013	−0·12	49	+·040	−0·27	70	+·020	−0·21	76
18–19	+·025	−0·24	56	+·031	−0·70	70	+·046	−0·49	62
19–20	+·034	−0·05	38	+·065	−0·66	37	+·020	−0·38	51
20–21	+·043	−0·43	51	+·067	−1·08	42	+·001	−0·67	34
21–22	+·028	−0·68	48	+·096	−0·60	25	+·035	−0·59	39
22–23	+·054	−0·65	42	+·072	−1·01	27	+·027	−0·53	35
23–24	+·060	−0·52	34	+·052	−0·65	33	+·017	−0·58	33

N.P.D. R.A. h h	130°–135° Δα s	Δδ ″	No.	135°–140° Δα s	Δδ ″	No.	140°–145° Δα s	Δδ ″	No.
0–1	+·037	−0·46	43	+·075	−0·65	26	+·005	−0·73	48
1–2	+·055	−0·40	34	+·098	−0·55	30	+·043	−0·86	47
2–3	+·016	−0·32	42	+·061	−0·81	23	+·035	−0·52	44
3–4	+·033	+0·06	46	+·028	−0·22	38	+·044	−0·40	42
4–5	+·049	−0·13	47	+·047	−0·12	30	+·041	−0·38	46
5–6	+·088	+0·20	50	+·066	−0·45	41	+·107	−0·47	52
6–7	+·084	+0·49	67	+·118	−0·25	48	+·125	−0·28	64
7–8	+·108	+0·12	69	+·118	−0·12	64	+·139	−0·27	85
8–9	+·071	−0·04	76	+·106	−0·24	108	+·103	−0·29	93
9–10	+·059	0·00	42	+·138	−0·26	64	+·131	−0·50	70
10–11	+·039	+0·08	55	+·095	−0·45	56	+·080	−0·17	74
11–12	+·061	+0·15	34	+·124	−0·31	56	+·077	−0·16	51
12–13	+·114	−0·07	36	+·180	−0·60	44	+·159	−0·49	45

N.P.D. R.A. h h	130°–135° Δα s	Δδ ″	No.	135°–140° Δα s	Δδ ″	No.	140°–145° Δα s	Δδ ″	No.
13–14	+·092	−0·09	57	+·137	−0·62	56	+·142	−0·47	55
14–15	+·119	−0·22	47	+·148	−0·44	54	+·161	−0·48	36
15–16	+·053	−0·21	70	+·119	−0·53	49	+·134	−0·39	49
16–17	+·071	−0·24	65	+·088	−0·63	63	+·074	−0·63	52
17–18	+·047	−0·24	54	+·055	−0·49	79	+·073	−0·68	38
18–19	+·050	−0·56	54	+·087	−0·85	63	+·109	−0·65	37
19–20	+·026	−0·54	36	+·108	−0·69	30	+·079	−0·84	39
20–21	+·048	−0·68	55	+·043	−0·89	32	+·072	−0·78	28
21–22	+·041	−0·51	28	+·049	−1·21	32	+·028	−0·82	40
22–23	+·085	−0·51	38	+·038	−0·81	39	+·010	−0·84	44
23–24	+·053	−0·51	52	+·081	−0·77	31	+·033	−0·70	50

N.P.D. R.A. h h	145°–150° Δα s	Δδ ″	No.	150°–155° Δα s	Δδ ″	No.	155°–160° Δα s	Δδ ″	No.
0–1	−·020	−0·48	35	+·039	−0·24	19	+·047	−0·34	15
1–2	+·001	−0·45	29	−·029	−0·34	23	−·026	−0·23	17
2–3	+·036	−0·63	31	+·098	−0·26	33	−·024	−0·02	23
3–4	+·061	−0·60	34	+·080	−0·33	32	+·007	−0·32	23
4–5	+·039	−0·32	45	+·049	−0·47	35	−·040	−0·62	25
5–6	−·003	−0·47	51	−·012	−0·27	36	−·019	−0·40	31
6–7	−·045	−0·37	44	−·018	−0·03	35	+·055	−0·69	27
7–8	+·020	−0·76	73	+·022	−0·25	31	+·056	−0·73	29
8–9	+·003	−0·50	60	+·051	−0·46	35	+·020	−0·59	33
9–10	+·018	−0·43	78	+·013	−0·38	47	+·027	−0·67	34
10–11	−·001	−0·45	109	−·018	−0·48	79	+·008	−0·44	27
11–12	+·054	−0·52	72	+·017	−0·33	86	+·066	−0·64	28
12–13	+·041	−0·46	59	+·037	−0·20	44	+·083	−0·47	35
13–14	+·035	−0·47	48	+·026	−0·42	55	+·066	−0·52	37
14–15	+·042	−0·42	50	+·026	−0·46	32	+·054	−0·54	32
15–16	−·051	−0·58	47	+·017	−0·30	36	+·012	−0·40	26
16–17	−·006	−0·28	45	−·002	−0·41	31	+·072	−0·45	25
17–18	−·001	−0·63	45	−·016	−0·14	32	+·052	−0·19	16
18–19	−·074	−0·78	40	+·020	−0·40	35	+·043	−0·05	16
19–20	−·005	−0·48	34	−·057	−0·40	19	+·068	−0·44	32
20–21	−·055	−0·42	19	+·008	−0·55	29	+·071	−0·31	18
21–22	−·008	−0·84	51	+·010	−0·50	24	+·074	−0·65	9
22–23	−·005	−0·82	39	+·039	−0·43	25	+·145	−0·57	11
23–24	−·027	−0·85	41	+·008	−0·34	27	+·154	−0·51	17

N.P.D.	160°–165°			165°–170°			170°–180°		
R.A.	$\Delta\alpha$	$\Delta\delta$	No.	$\Delta\alpha$	$\Delta\delta$	No.	$\Delta\alpha$	$\Delta\delta$	No.
h h	s	"		s	"		s	"	
0–1	+·041	−0·25	22	−·068	−0·97	25	−·169	−0·29	13
1–2	−·078	−0·35	18	−·023	−0·73	23	−·064	−0·32	17
2–3	+·078	−0·07	16	+·184	−0·67	16	+·105	−0·13	11
3–4	+·034	+0·09	20	−·030	−0·62	21	−·011	+0·34	15
4–5	+·004	−0·33	16	−·102	−0·52	14	−·337	−0·12	11
5–6	−·022	−0·35	20	−·067	−0·86	15	−·222	−0·70	9
6–7	+·048	−0·66	20	−·109	−0·64	14	−·261	−0·90	11
7–8	+·067	−0·74	22	−·050	−1·34	15	−·171	−0·96	11
8–9	+·060	−0·50	28	−·090	−1·26	23	−·280	−1·44	7
9–10	·000	−0·69	22	−·076	−1·90	19	−·066	−0·75	20
10–11	−·033	−0·52	19	−·066	−1·13	18	−·161	−0·87	19
11–12	+·123	−0·32	27	+·027	−1·42	17	−·269	−0·57	11
12–13	+·074	−0·44	24	+·098	−1·12	13	−·061	−0·87	11
13–14	+·056	−0·64	17	+·003	−0·86	12	−·103	−0·98	10
14–15	−·041	−0·54	20	−·048	−1·25	20	−·038	−0·87	11
15–16	−·043	+0·19	27	+·002	−0·77	19	−·525	+0·43	2
16–17	+·032	+0·01	20	+·106	−0·90	16	+·060	+0·14	10
17–18	+·005	0·00	16	+·010	−0·79	14	+·043	−0·32	12
18–19	+·080	+0·10	18	+·055	−0·88	11	+·100	−0·74	12
19–20	−·063	−0·42	26	−·079	−1·01	16	−·163	−0·33	3
20–21	+·056	−0·11	25	−·102	−0·62	25	−·044	−0·15	17
21–22	−·011	−0·24	26	−·047	−1·16	16	−·151	+0·11	17
22–23	+·024	−0·20	15	−·105	−0·98	17	−·092	−0·47	11
23–24	+·070	−0·56	20	+·006	−0·51	8	−·266	−0·51	19

TABLE II.

R.A.	$\Delta\alpha$	$\Delta\delta$	Number of Stars.
h h	s	"	
0–1	+0·020	−0·56	404
1–2	·020	·52	382
2–3	·042	·48	411
3–4	·032	·35	436
4–5	·022	·31	448
5–6	·051	·34	526
6–7	·069	·21	589
7–8	·088	·23	663
8–9	·065	·30	680
9–10	·057	·42	600
10–11	·024	·36	615

R.A. h h	Δα s	Δδ "	Number of Stars.
11–12	·061	·31	557
12–13	+0·098	−0·37	440
13–14	·076	·37	491
14–15	·068	·29	473
15–16	·043	·23	519
16–17	·053	·29	528
17–18	·029	·33	529
18–19	·042	·54	500
19–20	·028	·49	385
20–21	·027	·59	403
21–22	·016	·66	381
22–23	·028	·68	381
23–24	+0·025	−0·61	411
0–24	+0·047	−0·40	11752

TABLE III.

N.P.D. ° °	Δα s	Δα sin N.P.D. s	Δδ "	Number of Stars.
90–100	+0·028	+0·028	−0·73	301
100–110	·038	·037	·70	210
110–115	·044	·041	·17	428
115–120	·051	·045	·19	1072
120–125	·077	·065	·43	1114
125–130	·058	·046	·20	1199
130–135	·064	·047	·17	1197
135–140	·097	·066	·49	1156
140–145	·088	·054	·49	1229
145–150	·006	·003	·54	1179
150–155	·017	·008	·36	880
155–160	·041	·016	·47	586
160–165	+ ·024	+ ·007	·32	504
165–170	− ·030	− ·006	·97	407
170–180	−0·113	−0·010	−0·47	290
90–180	+0·047	+0·036	−0·40	11752

TABLE IV.

R.A.	Cape, 1880. Δα	Cape, 1880. Δδ	Melbourne, 1870. Δα	Melbourne, 1870. Δδ	Cape, 1860. Δα	Cape, 1860. Δδ	Cape, 1850. Δα	Cape, 1850. Δδ	Cape, 1840. Δα	Cape, 1840. Δδ
h	s	″	s	″	s	″	s	″	s	″
0·0	−0·024	−0·19	+0·009	+0·04	+0·016	−0·12	+0·031	−0·07	+0·097	−0·44
1·0	·027	·14	+ ·001	− ·02	+ ·012	·23	·023	·14	·119	·27
2·0	·016	·10	− ·020	+ ·04	− ·003	·35	·026	·25	·126	·18
3·0	·010	− ·02	·053	·21	·019	− ·17	+ ·011	·22	·089	·17
4·0	·020	+ ·07	·065	·34	·024	+ ·16	− ·018	·19	+ ·021	·28
5·0	− ·010	·07	− ·027	·30	·005	·26	·024	·24	− ·003	·48
6·0	+ ·013	·12	+ ·007	·18	·008	·22	− ·015	·22	·002	·55
7·0	·032	·15	+ ·008	·10	·015	·13	+ ·005	·18	+ ·007	·54
8·0	·030	·11	− ·016	·12	·012	+ ·03	+ ·005	·18	− ·030	·46
9·0	+ ·014	·04	·033	+ ·13	·014	− ·03	− ·008	·21	·085	·29
10·0	− ·006	·01	·041	− ·09	·057	·11	·028	·17	·125	− ·10
11·0	− ·004	·06	− ·019	·26	− ·070	·16	·037	− ·06	·124	+ ·09
12·0	+ ·033	·06	+ ·036	·34	+ ·008	·27	·013	+ ·01	·067	·19
13·0	·040	·03	·057	·39	·052	·30	·017	·06	·048	·13
14·0	·025	·07	·048	·19	·050	− ·05	·047	·17	·072	·32
15·0	·009	·14	·045	− ·01	·050	+ ·07	·049	·27	·067	·60
16·0	+ ·001	·14	·043	+ ·01	+ ·041	·14	·034	·30	·043	·76
17·0	− ·006	+ ·09	+ ·023	+ ·01	− ·002	·19	·019	·27	·027	·69
18·0	·011	− ·04	− ·001	− ·10	·034	·14	− ·007	·18	·026	·44
19·0	0·12	·12	·012	·11	− ·023	·18	+ ·011	·13	·010	·39
20·0	·019	·14	·017	·04	·000	·20	·021	·16	− ·002	·42
21·0	·025	·23	− ·006	·07	+ ·008	+ ·02	·031	·12	+ ·010	+ ·39
22·0	·025	·27	+ ·007	− ·07	·002	− ·18	·037	·11	·025	− ·09
23·0	−0·020	−0·25	+0·011	0·00	+0·008	−0·20	+0·039	+0·02	+0·063	−0·40

TABLE V.

N.P.D.	Cape, 1880. Δα	Cape, 1880. Δδ	Melbourne, 1870. Δα	Melbourne, 1870. Δδ	Cape, 1860. Δα	Cape, 1860. Δδ	Cape, 1850. Δα	Cape, 1850. Δδ	Cape, 1840. Δα	Cape, 1840. Δδ
°	s	″	s	″	s	″	s	″	s	″
95	+0·028	−0·73	+0·023	−0·57	+0·034	−0·82	+0·015	−0·19	−0·008	−0·73
100	·032	·71	·018	·36	·028	·58	·011	·28	·018	·53
105	·038	·70	·013	− ·21	·012	·46	+ ·006	− ·35	·015	− ·16
110	·041	·37	·004	+ ·07	·003	·30	− ·007	+ ·17	·011	+ ·37
115	·048	·19	·010	+ ·11	·015	·40	·022	·37	·011	·41
120	·064	·32	·028	− ·13	·040	·65	·027	+ ·07	·007	·11
125	·065	·32	·040	− ·17	·063	·60	·048	− ·12	·016	·07
130	·060	·20	·046	+ ·10	·080	·37	·074	− ·07	·027	·30
135	·078	·32	·052	·18	·098	·43	·071	+ ·01	·010	·46
140	·088	·50	·055	·02	·118	·63	·073	·04	− ·006	·48
145	·048	·53	·035	·01	·103	·67	·055	·16	+ ·012	·78
150	·010	·47	·005	·17	·064	·53	·068	+ ·08	·000	·92
155	·029	·42	+ ·005	·31	·067	·32	·031	− ·04	+ ·047	·81
160	+ ·032	·44	− ·037	·40	+ ·013	·15	·010	·00	+0·083	+ ·44
165	− ·007	·80	·090	+ ·13	−0·078	−0·33	−0·032	− ·23	—	− ·31
170	·058	·83	·125	·00	—	—	—	−0·09	—	−0·19
175	−0·113	−0·47	−0·176	+0·13	—	—	—	—	—	—

Blackheath: June 1887.

A Catalogue of 480 Stars to be used as Fundamental Stars for Observations of Zones between 20° and 80° South Declination.

By Prof. A. Auwers.

One of the most important works to be done by the next generation of astronomers will consist in a new and systematic determination of the places of the southern fixed stars down to the 9th magnitude.

One object of this determination will be the completion of the general knowledge of stellar proper motions by comparisons to be made with Dr. Gould's determinations for the epoch 1875. If this alone were considered, the new observations might advantageously be deferred some ten or twenty years more. But the wants of the great photographic survey, to be made according to the Paris programme with a mean epoch of probably 1900±, will render it preferable to have this new determination made nearly for this same epoch.

The most efficient way to secure homogeneousness and completeness in this determination will be the arrangement of zone-observations like those of the Astronomische Gesellschaft, till now made between the declinations 80° and −2°, and presently to be extended to −23°, constructing the working lists for the zones from the preliminary photographic survey of the southern heavens by which Dr. Gill has undertaken to complete the Bonner Durchmusterung. Astronomers hope to have the results of this survey within the next few years, and in order to enable the southern observatories then not only to begin the zone-observations without delay, but also to make the reductions within due time, it appears not too early to prepare for these observations of southern zones by providing at once for a uniform and accurate determination of the positions of a sufficient number of stars, which ought to be used as fundamental stars in the reduction of the zones.

Dr. Gill having expressed to me his desire that I should make the selection of these stars, in order that they should be included in the new working list which was to be constructed about a year ago for the Transit circle of the Cape Observatory, I have drawn up the following list, which I now beg herewith to communicate to the astronomers of the southern hemisphere, expressing, in accordance with Dr. Gill, the wish that a sufficient number of them will co-operate towards the accurate determination of these stars in the same manner as has been done for the fundamental stars used in the zone-observations of the Astronomische Gesellschaft.

The selection of the stars included in the following catalogue was to be made upon the following principles :—

1. The stars ought to be distributed, at convenient intervals, as equally as possible over the area covered by the zones to be observed. This area may be considered to be conveniently